

## **ABSTRACT**

A diamond based Blue/UV light emitting source is disclosed. The source includes a diamond substrate having a first conductivity type, a first aluminum gallium nitride layer above the diamond substrate having the same conductivity type as the substrate, a bulk or a quantum well structure on the AlGa<sub>N</sub> layer formed of a plurality of repeating sets of alternating layers selected from among Ga<sub>N</sub>, InGa<sub>N</sub>, and AlInGa<sub>N</sub>, a second AlGa<sub>N</sub> layer on the quantum well or the bulk active layer having the opposite conductivity type as the first AlGa<sub>N</sub> layer, a contact structure on the second AlGa<sub>N</sub> layer having the opposite conductivity type from the substrate and the first AlGa<sub>N</sub> layer, an ohmic contact to the diamond substrate, and an ohmic contact to the contact structure.